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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,621	02/15/2001	Diether Rueppel	1998 / F-085	1893
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CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899			TRAN, SUSAN T	
			ART UNIT	PAPER NUMBER

1615

DATE MAILED: 06/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/744,621

Applicant(s)

RUEPPEL ET AL.

Examiner

Susan T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 20, 22, 25, 27 and 31-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minami et al. US 4,874,808, in view of Cardarelli et al. US 3,590,119 (Cardarelli '119).

Minami teaches a composition comprising mixture of cycloolefin copolymers containing an ethylene component having glass transition temperature in the range of 30°C-240°C (column 13, lines 29-34). The composition can be used as a slow releasing agent for chemical fertilizers (column 17, lines 35-37). Cycloolefin copolymers include an ethylene/tetracyclododecene copolymer (column 21, line 61).

Minami does not expressly teach the cycloolefin copolymers as a polymer matrix.

Cardarelli '119 teaches a controlled release rubber matrix composition comprising larvicide or insecticide (active substance) (column 3, lines 50-73; and example 1). The matrix is made of interpolymer, such as terpolymers of ethylene, including ethylene, propylene and copolymer of ethylene norbornene (column 5, lines 56-68). The composition can be prepared by mill bonding and Banbury mixing, where

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the terpolymer and the active substance are mixed and than mill/ground into a fine or coarse dust or powder (column 4, lines 33-57; and column 7, lines 64-72). Thus, it would have been obvious for one of ordinary skill in the art to modify the cycloolefin copolymer composition of Minami in the form of controlled release rubber matrix in view of the teaching of Cardarelli '119, because Cardarelli '119 teaches a controlled release rubber matrix that is safe and non-toxic to humans and higher animal forms, while they are storage stable and effective for indefinite periods of time (column 4, lines 42-45), because Cardarelli '119 teaches a controlled release rubber matrix having a release rate over a long period of time (column 4, lines 14-20; and column 5, lines 20-40), and because Minami teaches the composition of cycloolefin copolymers can be used as a slow releasing agent for chemical fertilizers (column 17, lines 35-37). The expected result would be a stable controlled release polymer matrix comprising active compounds that is useful in agrochemical field.

Claims 20, 22-25, 27-29 and 31-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minami et al. US 4,874,808, in view of Herrmann-Schönherr et al. US 5,863,986, and Cardarelli et al. US 3,590,119 (Cardarelli '119).

Minami is relied upon for the reason stated above. The reference is silent as to the teaching of the claimed viscosity of the cycloolefin copolymers.

Herrmann-Schönherr teaches a core-shell particle composition comprising one or more cycloolefin copolymers having glass transition temperatures between 50°C to 250°C, and viscosity numbers between 25 and 200 ml/g (column 5, lines 31-39). The

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cycloolefin copolymers such as norbornene/ethylene and tetracyclododecene/ethylene are preferred (column 4, lines 1-6).

The references do not expressly teach the cycloolefin copolymers comprising agrochemical active substance.

Cardarelli '119 teaches a controlled release rubber matrix composition comprising larvicide or insecticide (active substance) (column 3, lines 50-73; and example 1). The matrix is made of interpolymer, such as terpolymers of ethylene, including ethylene, propylene and copolymer of ethylene norbornene (column 5, lines 56-68). The composition can be prepared by mill bonding and Banbury mixing, where the terpolymer and the active substance are mixed and than mill/ground into a fine or coarse dust or powder (column 4, lines 33-57; and column 7, lines 64-72). Thus, it would have been obvious to one of ordinary skill in the art to modify the cycloolefin copolymer composition of Minami using the cycloolefin copolymers in view of the teaching of Herrmann-Schönherr, in the form of controlled release rubber matrix in view of the teaching of Cardarelli '119, because Cardarelli '119 teaches a controlled release rubber matrix that is safe and non-toxic to humans and higher animal forms, while they are storage stable and effective for indefinite periods of time (column 4, lines 42-45), because Cardarelli '119 teaches a controlled release rubber matrix having a release rate over a long period of time (column 4, lines 14-20; and column 5, lines 20-40), because Minami teaches the composition of cycloolefin copolymers can be used as a slow releasing agent for chemical fertilizers (column 17, lines 35-37), and because

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Herrmann-Schönherr teaches the core-shell composition comprising cycloolefin copolymer is suitable for a multiplicity of applications (column 10, lines 1-3).

It is noted that Minami and Herrmann-Schönherr do not teach the claimed molecular weight of the cycloolefin copolymer. However, it is the position of the examiner that the cycloolefin taught by Minami and Herrmann-Schönherr also have the claimed molecular mass, because the references teach the use of the claimed cycloolefin copolymer, namely, norbornene/ethylene and tetracyclododecene/ethylene, having the claimed viscosity and glass transition temperature. Products of identical chemical composition cannot have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Claims 20-22, 27 and 31-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardarelli et al. US 4,400,374, in view of Cardarelli et al. US 3,590,119.

Cardarelli '374 teaches a composition for controlled release of compounds from a dispenser including thermoplastic polymer matrix or thermoset matrix (see abstract; and column 3, lines 48-64). The compounds are selected from trace nutrient, plant growth regulators, nematicides, insecticides, molluscicides, cercariacides, aquatic larvicides, and combinations thereof; and are dispersed through the polymer matrix (column 4,

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lines 4-42; column 5, lines 5-15, lines 30-43; column 7, lines 4-12 and claim 10). The composition further comprises additives, such as filler (column 13, lines 28-41). The composition also comprises porosigen (diatomaceous earth) (column 15, lines 1-67). The composition can be prepared by mixing the components and then cut, chop, or ground to achieve suitable shape and size (column 17, lines 67 through column 18, lines 1-37). The thermoplastic polymer includes copolymers or terpolymers (column 7, lines 38-68).

Cardarelli '374 does not teach cycloolefin that is a norbornene-ethylene copolymer. However, Cardarelli '119 teaches a controlled release rubber matrix composition comprising larvicide or insecticide (active substance) (column 3, lines 50-73; and example 1). The matrix is made of interpolymer, such as terpolymers of ethylene, including ethylene, propylene and copolymer of ethylene norbornene (column 5, lines 56-68). The composition can be prepared by mill bonding and Banbury mixing, where the terpolymer and the active substance are mixed and then mill/ground into a fine or coarse dust or powder (column 4, lines 33-57; and column 7, lines 64-72). Thus, it would have been obvious for one of ordinary skill in the art to modify the controlled-release polymer matrix of Cardarelli '374 using the terpolymers including ethylene, propylene and ethylene norbornene in view of the teachings of Cardarelli '119, because Cardarelli '374 teaches a composition that exhibits long release duration (column 8, line 31), which can last for days, months, and even years (see abstract), because Cardarelli '119 teaches the controlled release rubber matrix is relatively safe and non-toxic to humans and higher animal forms, while they are storage stable and effective for

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indefinite periods of time (column 4, lines 42-45), and because Cardarelli '119 that lower dosages of the compounds over longer periods comparing to conventional composition (column 4, lines 1-7, lines 58-75). The expected result would be a stable controlled release polymer matrix comprising active compounds that is useful in agrochemical field.

Claims 19 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardarelli '374, in view of Cardarelli '119 and Kanda et al. US 4,923,894.

Cardarelli '374 and Cardarelli '119 are relied upon for the reasons stated above. The references do not explicitly teach the average diameter of the particle.

Kanda teaches a polymeric microparticle encapsulating active substance having pesticidal activity (see abstract, and column 1, lines 6-18). The polymeric microparticle has an average particle size of 0.01 to 250 microns (column 2, lines 57-60). Thus, it would have been obvious for one of ordinary skill in the art to modify the polymer matrix of Cardarelli '374 and Cardarelli '119 to have the average particle size of 0.01 to 250 μm in view of the teachings of Kanda, because Cardarelli '374 and Cardarelli '119 teach the polymer matrix can be cut, chopped or ground to achieve a suitable size, and because Kanda teaches polymeric microparticle having average particle size of 0.01-250 μm for retaining good dispersibility, reactivity and stability (column 2, lines 59-61). The expected result would be a stable controlled release polymer matrix comprising active compounds that is useful in agrochemical field.

Claims 30 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardarelli '374, in view of Cardarelli '119 and Eby, III US 5,409,905.

Cardarelli '374 and Cardarelli '119 are relied upon for the reasons stated above. The references do not explicitly teach the use of the polymer matrix in a pharmaceutical composition. However, Cardarelli '374 teaches thermoplastic polymer matrix use to control release of trace nutrient including zinc (column 4, lines 7-11). It is the position of the examiner that zinc is known for the treatment of cold. Evident by the teaching of Eby (see abstract). Eby teaches the use of zinc for the treatment of common cold (see abstract). Thus, it would have been obvious for one of ordinary skill in the art to modify the polymer matrix of Cardarelli '374 and Cardarelli '119 for the slow release of zinc useful for the treatment of common cold in view of the teaching of Eby, because Eby teaches the use of zinc in a pharmaceutical composition that has a pleasant taste and slowly release zinc over a prolong period of time (column 10, lines 22-30), because Eby teaches a zinc composition that is non-toxic, thermally, chemically, and flavor stable for over long period of storage time (column 7, lines 60-65), because Cardarelli '374 teaches a composition that exhibits long release duration (column 8, line 31), which can last for days, months, and even years (see abstract), because Cardarelli '119 teaches the controlled release rubber matrix is relatively safe and non-toxic to humans and higher animal forms, while they are storage stable and effective for indefinite periods of time (column 4, lines 42-45). The expected result would be a stable controlled release polymer matrix comprising active compounds that is useful in pharmaceutical art.

Response to Arguments

Applicant's arguments filed 03/16/06 have been fully considered but they are not persuasive.

Applicant argues that the claimed microparticles are not obvious in view of Minami and Cardarelli, because Minami does not disclose microparticles or an active substance embedded in a matrix, and Cardarelli teaches a different type of polymer and the active substance is dissolved in the rubber, not embedded in the polymeric matrix.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Furthermore, in response to applicant's argument that Cardarelli teaches a different type of polymer and the active substance is dissolved in the rubber, not embedded in the polymeric matrix, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In the instance case, the rejection is relied upon the combination teachings of Minami in view of Cardarelli for the reason that it would have been obvious for one of ordinary skill in the art to modify the cycloolefin copolymer composition of Minami in the form of controlled release rubber matrix in view of the

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teaching of Cardarelli '119, because Cardarelli '119 teaches a controlled release rubber matrix that is safe and non-toxic to humans and higher animal forms, while they are storage stable and effective for indefinite periods of time (column 4, lines 42-45), because Cardarelli '119 teaches a controlled release rubber matrix having a release rate over a long period of time (column 4, lines 14-20; and column 5, lines 20-40), and because Minami teaches the composition of cycloolefin copolymers can be used as a slow releasing agent for chemical fertilizers (column 17, lines 35-37). The expected result would be a stable controlled release polymer matrix comprising active compounds that is useful in agrochemical field.

In response to applicant's argument that the references do not teach active agents being embedded in the matrix but dissolved in the rubber, it is noted from applicant's specification that active agents are mixed by kneading together with the polymer and fillers (page 12, lines 20-22). Accordingly, embedding the active agents is done simply, by mixing. It is noted that Cardarelli teaches that the terpolymer and the active substance are mixed and then mill/ground into a fine or coarse dust or powder (column 4, lines 33-57; and column 7, lines 64-72). Thus, inherent the embedding limitation.

Applicant argues Hermann-Schönherr does not teach the polymer alloys can be used as a slow releasing agent for chemical fertilizers or for any other substance, and therefore, the combined teachings of Minami, Cardarelli and Hermann-Schönherr still fail to show the claimed microparticles. In response to applicant's argument, the test for obviousness is not whether the features of a secondary reference may be bodily

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incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Hermann-Schonherr is relied upon solely for the teachings of the properties of the cycloolefin copolymer.

Applicant argues that there is no motivation to combine the '374 patent with the '119 patent, because the '119 patent using different class of polymers having different properties. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Following are reasons to combine the '374 and '119 patents: the '374 patent requires that the solid dispenser or plastic matrix is made of polymer that is not soluble in water. See for example, at column 7, lines 54-58, "it is noted that if a thermoplastic is soluble in water, it is not desired or a part of the present invention since the thermoplastic matrix dispenser will readily and rapidly degrade and not permit slow release over an extended period of time". The '374 patent further discloses polymer which can be used includes common copolymers or terpolymers, such as various polyolefins, polyethylene, and various

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copolymers of ethylene (column 7, lines 60 through column 8, lines 1-3). Similarly, the '119 teaches water-insoluble elastomers including interpolymers of ethylene, a higher alpha-olefin, propylene and ethylene norbornene (column 5, lines 56-75). The '119 patent further teaches the EPDM elastomeric composition provides a release rate for a period of at least several months (column 5, lines 36-40). Thus, the two references teach the desirability of achieving slow release polymer matrix, e.g., gradual and controlled release of the compound in the water over a period of time such as months, or even years (see the '374 at column 17, lines 48-50). Furthermore, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Applicant argues that Kanda does not teach the COC of the present invention. In response to applicant's argument, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Kanda is cited solely for the teaching of a polymeric microparticle encapsulating active substance having pesticidal activity, in combination with Cardarelli '374 and '119.

Applicant argues that there is no reason for one skilled in the art to combine Cardarelli '374 in view of Cardarelli '119 and Jacobs '686. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Jacobs '686 is relied upon for the teaching of the known properties of COC, such as norbornene-ethylene.

Applicant argues that Eby does not cure the deficiencies of Cardarelli '374 and Cardarelli '119. In response to applicant's argument, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Eby is cited solely for the teaching of zinc that can be used in the treatment of common cold.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

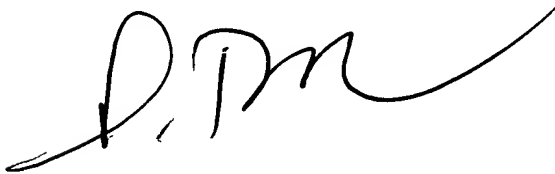
Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan T. Tran whose telephone number is (571) 272-0606. The examiner can normally be reached on Monday through Thursday 6:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on (571) 272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'S. Tran', with a stylized, flowing script.

S. Tran
Patent Examiner
AU 1615